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Conference Abstract

Robot-in-the-loop: Prototyping robotic digitisation at the Natural History Museum

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Abstract

The Natural History Museum, London (NHM) is home to an impressive collection of over 80 million specimens, of which just 5.5 million have been digitised. Like all similar collections, digitisation of these specimens is very labour intensive, requiring time-consuming manual handling. Each specimen is extracted from its curatorial unit, placed for imaging, labels are manually manipulated, and then returned to storage. Thanks to the NHM's team of digitisers, workflows are becoming more efficient as they are refined. However, many of these workflows are highly repetitive and ideally suited to automation. The museum is now exploring integrating robots into the digitisation process.

The NHM has purchased a Techman TM5 900 robotic arm, equipped with integrated Artificial Intelligence (AI) software and additional features such as custom grippers and a 3D scanner. This robotic arm combines advanced imaging technologies, machine learning algorithms, and robotic manipulation capabilities to capture high-quality specimen data, making it possible to digitise vast collections efficiently (Fig. 1).

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Figure 1.

Dr Arianna Salili-James operates the Techman TM5 Robotic Arm. Photo by Dr. Steen Dupont used with permission CC BY 4.0.

We showcase the NHM's application of robotics for digitisation, outlining the use cases developed for implementation and the prototypical workflows already in place at the museum. We will explore our invasive and non-invasive digitisation experiments, the many challenges, and the initial results of our early experiments with this transformative technology.

Keywords

artificial intelligence, robotics, collections, cobot

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Conflicts of interest

The authors have declared that no competing interests exist.